

## Accessing 2020 Census Redistricting Data Through the Census Data API: Tables and Group Calls

Transcript

September 2021

Hi, my name is Deb. The Census Bureau offers data users different ways to access 2020 Redistricting Data. One of those ways, is the Census Bureau's Application Programming Interface, or the API. The API is a data service that connects data users to cell-level Census Bureau data and empowers them to extract data for a variety of uses like research, creating interactive visualizations, and develop applications, through a simple interface. Data users can pull data for a single estimate, as we demonstrated in a previous video, or full tables with just a few core concepts and steps.

In this video, my colleague Jessica Barnett will go over the steps on how to pull an entire table using a group call for Redistricting Data using the Census API.

Hi, I'm Jessica and I work in the Dissemination Outreach Branch. Today I want to show you how to access 2020 Public Law 94-171 Redistricting Data through the Census Application Programming Interface, or API.

Public Law, or P.L., 94-171, requires that the Census Bureau provide states the opportunity to identify the geographic areas for which specific population tabulations are needed and provide those tabulations to states in a timely manner for the purpose of redistricting. We've developed this video tutorial to help you find the P.L. 94-171 Redistricting Data using the Census API.

In the event that you do not already have any data in mind to use from the P.L. 94-171 Redistricting Data, you may want to take a look at what's available. My colleague, Maria, put together some video tutorials that cover how to find all of the 2020 P.L. 94-171 Redistricting Data tables that are found in [data.census.gov](https://data.census.gov). If you want to find out what's available, please check them out on our Resources page, which is linked below.

Let's say that I want to find detailed data on the group quarters population, which includes both institutionalized and noninstitutionalized people, in Milwaukee, Wisconsin. When I look in [data.census.gov](https://data.census.gov), this information is provided in table P5.

I'd like to use the Census API to get this entire table—which is what we refer to as making a group call. So now the question is how to go about doing that. First, we need to access the 2020 Decennial Census API. We'll use our API Discovery Tool to do this. Go to [census.gov](https://census.gov) forward slash data forward slash developers dot html. Then, at the top, under the Developers heading, click on the link to the Discovery Tool. You have three different options for using the API Discovery Tool. I prefer to use the html version, so click on the first link—the one for [api.census.gov](https://api.census.gov/data.html) forward slash data.html. This lists every dataset that's available through the API, for every year that it's available. That makes for a lot of data! Let's hit the Ctrl and F keys to open the search functionality and

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search for Redistricting. The first matches are for the 2000 Redistricting Data. Let's click through those. Then we get to the 2010 Redistricting Data, and we'll continue to click through those. Finally we'll reach the 2020 Redistricting Data. It should say Decennial Census Redistricting Data (PL 94-171) in the very first column and 2020 in the third column.

Now let me show you a little trick for isolating the information for the dataset that you want, rather than having to go through this each time you want to go to the 2020 Redistricting Data. In the fourth column, you'll see that it says dec and pl separated by a greater than sign. We'll use this information to isolate the dataset. Navigate up to the top of the screen, put the cursor right after the word 'data', and enter a forward slash. Then type in 2020, which represents the year that we are using, and then forward slash dec forward slash pl. Once you are done, the URL should say api.census.gov forward slash data forward slash 2020 forward slash dec forward slash pl dot html. Hit Enter. Now you just have the API information that's directly related to the 2020 Redistricting Data showing on the screen.

Let's take a moment to go over the different links that are available for this API. The first link is for geographies. If you click on that, you'll find all the geographies that the 2020 Redistricting Data is available for. We happen to need data for Milwaukee, which is considered a 'place' when we're talking Census geographies, and we can see on the 12<sup>th</sup> line that this data is available for places, which is Summary Level 160.

If we click on the back arrow, and then click on the variables link, we'll find all of the variables that are available in the 2020 Redistricting Data. Knowing this information is useful particularly if you wanted to pull one or more individual pieces of data, rather than an entire table like we want to do.

If we click on the back arrow and click on the groups link, we'll find the list of the six tables that are available from the 2020 Redistricting Data. The tables that are listed on this page are the ones that we would be able to run a group call on in order to get data for the entire table, and we can see that table P5 is listed here. This indicates that we should have no problem in running a group call for this table.

Let's click on the back arrow again and move on to the examples link. This page is extremely helpful because it provides you with example API queries that you can use for each available geography. We'll take a closer look at this page again soon.

Click on the back arrow again and click on the documentation link. This will take you back to the Developers page where you can find more information on the Census API.

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And, if we click on the back arrow a final time, we'll see the base API query that is used for the 2020 Redistricting Data. As you use this Redistricting Data API, you'll notice that every API query starts with this same base URL.

Now let's get into actually using the API. Navigate back over a couple columns and click on the same examples link that we selected earlier. We need this data for Milwaukee, Wisconsin, so we're looking for the place geography. We discovered earlier that we're looking for Summary Level 160, so this helps make it a bit quicker to find what we're looking for. Just scroll down until you find 160 listed in the second column titled Geography Level. There are three different API queries found for this. The first one includes an asterisk. When looking at API queries, an asterisk indicates that all geographies will be included. In other words, when we see that this particular query includes `&for=place` with the asterisk, we know that it will run the requested query and return data for all the places in the US.

The second query also includes asterisks for both the place and the state. While it looks a little different, as it is currently defined, this query will actually run the same data that the first query will run—in other words, it will run data for all places in all states. There are instances where using one of these queries over the other may be preferable, but we won't cover that right now.

Moving on to the third query, this one will run data for one specific place in the given state. Comparing these queries against our need for data for Milwaukee, it looks like we'll want to use this third query. Let's right click on this third query and select 'Open link in new tab.' Once it's done running, we can see that it provided the name of a place and state, New York city, New York, and it has the numbers '36' and '51000.' Although it seems like these numbers are related to New York city and New York state, this is a good time to confirm what these numbers mean.

Let's start with the two-digit number found near the end of the API query. This two-digit number is the state Federal Information Processing System, or FIPS, code. The state FIPS code included in this query, 36, is the code for New York. We're going to need the state FIPS code for Wisconsin though. In addition, we'll need to figure out what to do with the five-digit place number. It looks like this five-digit number corresponds to New York city, so how can we figure out what five-digit number corresponds to Milwaukee?

The easiest way to do this is to go back to the example queries, right click on the first 'place' query, and click on 'Open link in new tab.' This is going to run the query for all places in the US. At the end of each line of output, we can see there is a two-digit

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number and a five-digit number shown. The two-digit number is the state FIPS code and the five-digit number is the unique identifier for each place found in this list. For example, the first line shows that '26210' is the unique identifier for Ganado CDP, while the '04' indicates that it's in Arizona. We can determine this by looking at the numbers at the end of the line of output, as well as the Name that is provided.

So now let's move on to finding Milwaukee in all of this output. Hit the Ctrl and F keys to open the Find functionality and type in Milwaukee. The first match that comes up is for Milwaukee CDP in North Carolina, which we don't want, so let's keep searching. The next match is for West Milwaukee village in Wisconsin—so we're in the right state, but this isn't quite the geography that we want. Finally, it looks like the third match is the one that we want—Milwaukee city, Wisconsin! Looking at the unique identifier number found at the end of that line, it looks like it's 53000. And we can see that the state FIPS code for Wisconsin is 55. Let's make a note of this to use later. Now that we have the identifier for Milwaukee and the FIPS code for Wisconsin, and to help eliminate any future mixup, I'm going to close this tab for the query we just used for all the places in the US—we won't need it any more for this example.

I'd like to note that you can also find a complete list of FIPS codes by going to our geographic reference files, which are linked below.

Let's return to our API query that is currently looking at New York city. Now that we know both the state FIPS code and the unique place identifier, we can go ahead and change those in the URL. Change '51000' to '53000,' change '36' to '55,' and hit Enter to run the query—we just want to make sure that things work as we expect in relation to changing the geography. And it worked! We now have the information for Milwaukee.

So now we are partway through what we are trying to accomplish. All that's left is to change the query so that it runs data for all of table P5. Recall that this is referred to as running a group call. All this really means is that we're going to pull data for an entire table at once, instead of pulling data for individual variables.

To do this, go to the get= portion of the URL, and replace the word 'NAME' with the word 'group', open parenthesis, 'P5', and close parenthesis. Anytime that you pull data using a group call, you would use this same structure for the get statement. The only part that you would want to change is the ID of the table being used. In this case, we're using the table ID of P5. Now that we have that done, let's hit Enter again to see what happens.

It worked! Reading from left to right, we have the geographic identifier, or GEOID, which is this long 16-digit number that is the full unique identifier for the place of Milwaukee

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city, Wisconsin; the Name of our geography of interest, Milwaukee city, Wisconsin; data for twenty variables; the state FIPS code of '55'; and the unique place identifier for Milwaukee, which is 53000.

Now let's take a closer look at the data for the variables. There are ten numbers that alternate with ten null values. The ten numbers correspond to the ten variables found in the table—P5\_001N, which is the total number of people in group quarters; P5\_002N, which is the total institutionalized population; P5\_003N through P5\_006N, which provide a detailed breakdown of the type of group quarters that the institutionalized population is in; P5\_007N, which is the total noninstitutionalized population; and P5\_008N through P5\_010N, which provide a detailed breakdown of the type of group quarters that the noninstitutionalized population is in. So this means that there were 15,680 total people in group quarters, 3,422 people in the institutionalized population, and 12,258 people in the noninstitutionalized population in Milwaukee in 2020.

Then we have null values, such as P5\_001NA to P5\_010NA. These are described as being the annotation of each of the respective variables. For example, P5\_001NA is the annotation of the total number of people in group quarters. If there was a change or a note of explanation, it would be notated in these fields. But, as we can see, these values are all null, so there's nothing to worry about in this case.

Now that we have this data for Milwaukee, let's say that we need data from the same table, but for a different geography, like all the congressional districts in Nebraska. Since we've already prepared the query for Milwaukee, the only thing that we'll need to do at this point is swap out the geography portion of the API query—this is the part that says '&for=place:53000&in=state:55'.

Let's go back to the 2020 Redistricting Data API examples page—the one found at [api.census.gov/data/2020/dec/pl/examples.html](https://api.census.gov/data/2020/dec/pl/examples.html). We need to look for the queries for congressional districts. It happens to be about a third of the way down the page, and the Summary Level is 500. Again, we can see that we have three queries to choose from.

The first query is going to give you all the congressional districts in the US. The second query, as it is currently defined, will essentially provide the same data as the first—you'll end up with data for all the congressional districts in the US. As with the other case that we saw earlier, there are times where choosing one of these queries over the other is preferred, but we won't be covering that right now. The third and final query will provide you with data for one specific congressional district within the given state.

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So we need data for all the congressional districts in Nebraska and none of these queries will provide exactly that information. The first two will provide a bit more than we need, as we'll have data on *all* the congressional districts in the US. The last one will not provide enough, as we would only be able to get data for one congressional district in Nebraska at a time. The good news is that there is a way to modify the second API query in order to get data for all the congressional districts within a state. We'll cover how to do this in a moment.

Recall that we still have the query open that we used to get data for Milwaukee and all we really need from this congressional district query is the geography portion. For now, let's just grab what we need. Right click on the second congressional district query, hit 'Open link in new tab,' highlight the portion of the URL that begins with '&for=congressional%20district:\*&in=state:\*', right click on it, and hit Copy.

Now let's go back to the query that we were using earlier for Milwaukee. Highlight the very last part of the URL, the part that says '&for=place:53000&in=state:55', right click on it, and hit paste. This should swap out the old 'for' statement for Milwaukee with this new portion that's for all the congressional districts in the US. Once that's done, hit Enter to run the query.

It looks like it worked. The output starts off with providing the congressional districts in Missouri and moves on through the list of states. We only want Nebraska, though, so let's go back to what I mentioned earlier and modify the geography portion of the query so that it will only run for the congressional districts in Nebraska. We'll do this by changing the last asterisk in the query, the one for state, to the two-digit state FIPS code. So now we just need to figure out what the FIPS code is for Nebraska. Let's make use of what we have on the screen right now. Hit the Ctrl + F keys to open the search functionality. Type in Nebraska. We just need the FIPS code, which is the second-to-last number in the output. From this first match, it looks like the FIPS code is 31. Now let's navigate back up to the query and change that last asterisk for state to '31.' Then hit Enter to run the query. And it worked! Now we just have data for the three congressional districts in Nebraska, which is exactly what we needed.

The output reads very much like it did before for Milwaukee. It starts out by giving the GEOID, which is the full unique identifier for each congressional district; the name of each congressional district; data for the ten variables, along with data for the ten annotation variables; the state FIPS code of '31'; and the congressional district number.

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As you can see, once you get the hang of it, the Census API can provide a very quick and easy way to get the data you need. I hope this tutorial helps you in finding the 2020 P.L. 94-171 Redistricting Data through the Census API.

We hope that after watching this video you will feel empowered to start using the Census Bureau's Application Programming Interface. I want to thank my colleague Jessica Barnett for giving us a thorough walkthrough on using the Census API, and you for watching this video. If you'd like additional guidance on how to use the Census API, our data platform [data.census.gov](https://data.census.gov), or the Microdata Access, please visit the link provided below. Thank you.